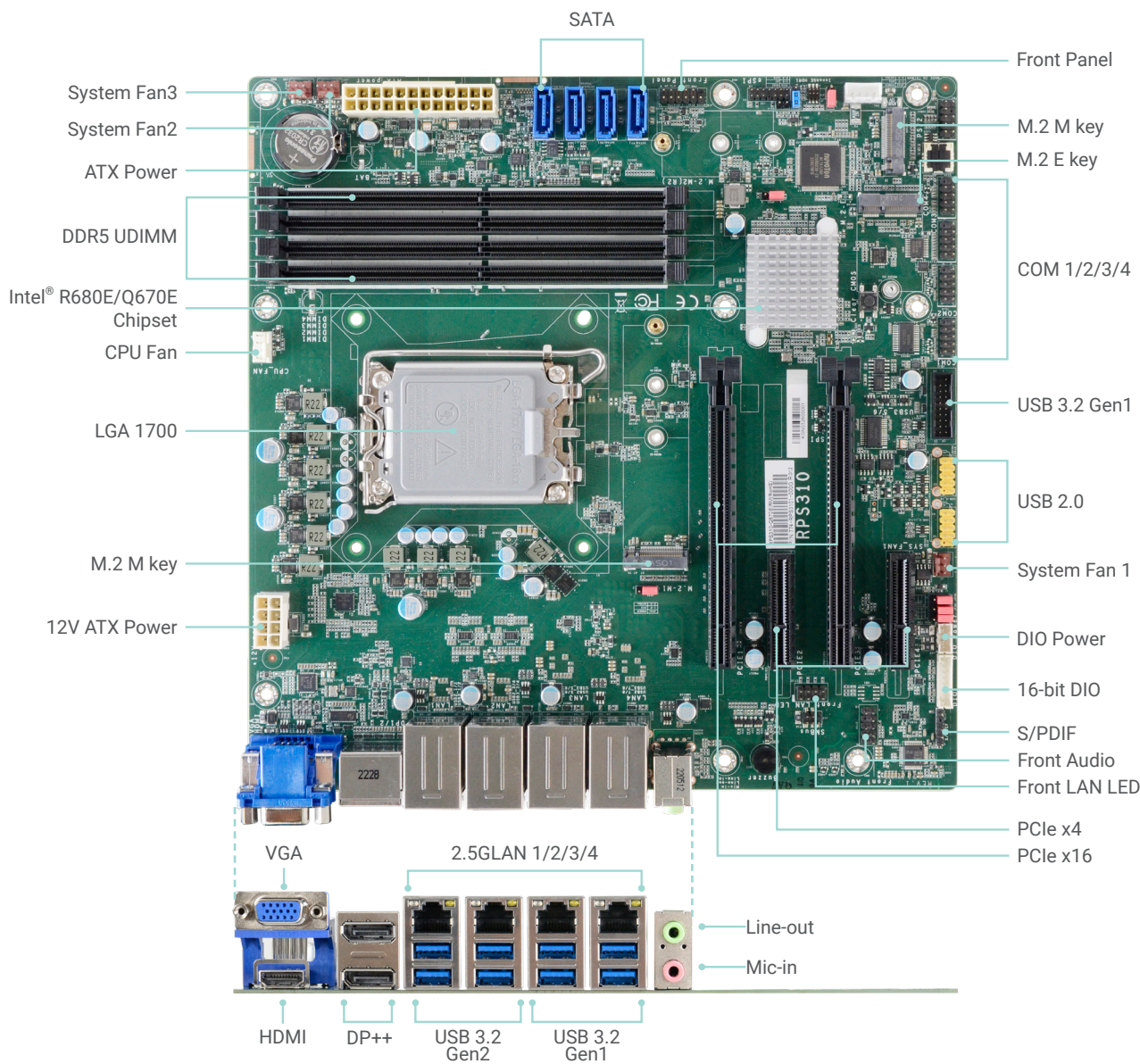


# RPS310-R680E/Q670E 13/12th Gen Intel® Core™ Desktop microATX



Top View

## KEY FEATURES



### DDR5

4 DDR5 DIMM up to 128GB



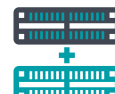
### 4K High Resolution

Supports 4K resolution



### Quad Displays

VGA, 2 DP++, HDMI



### Multiple Expansion

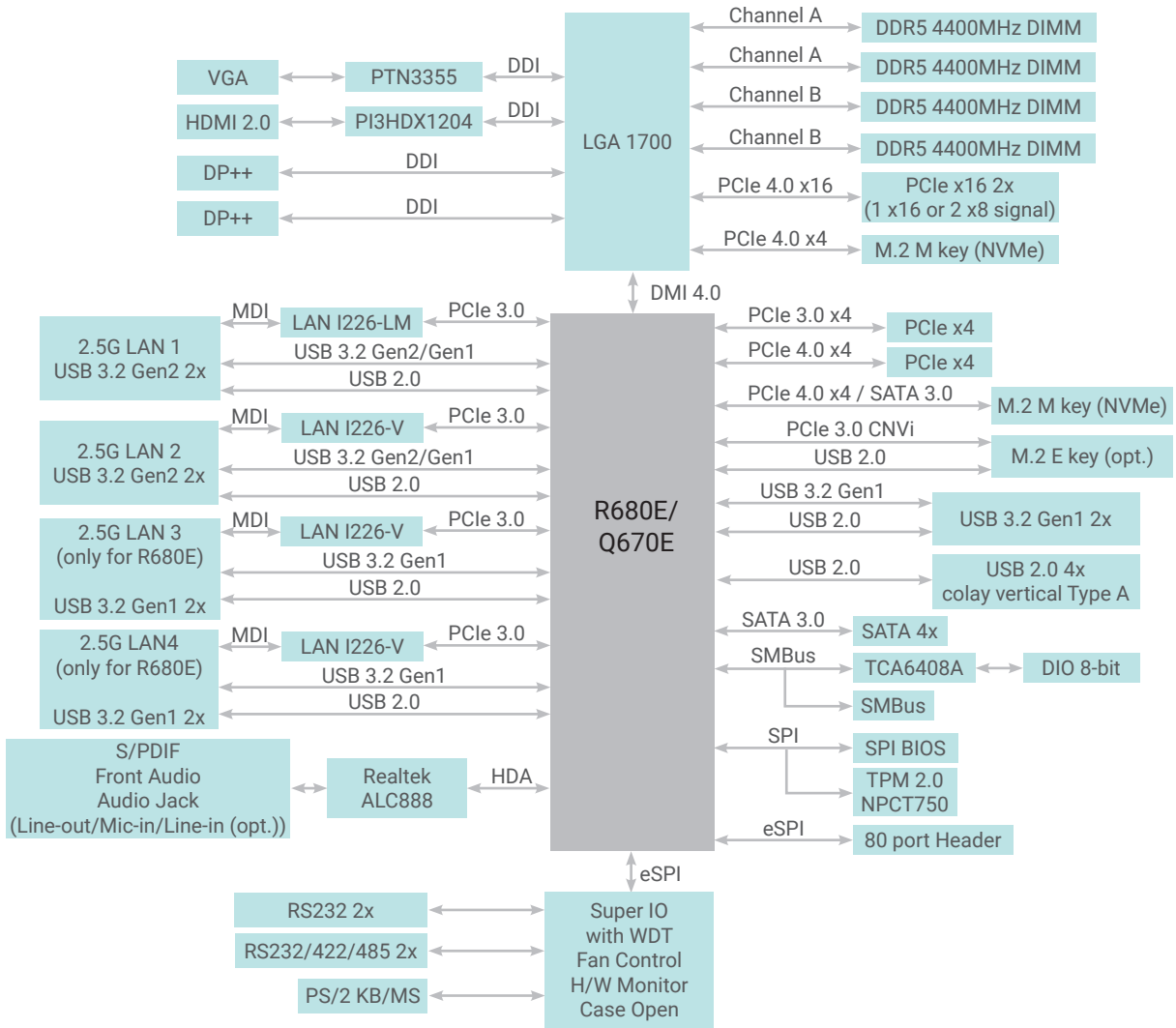
2 PCIe x16, 2 PCIe x4, 1 M.2 E key, 2 M.2 M key, 4 SATA 3.0



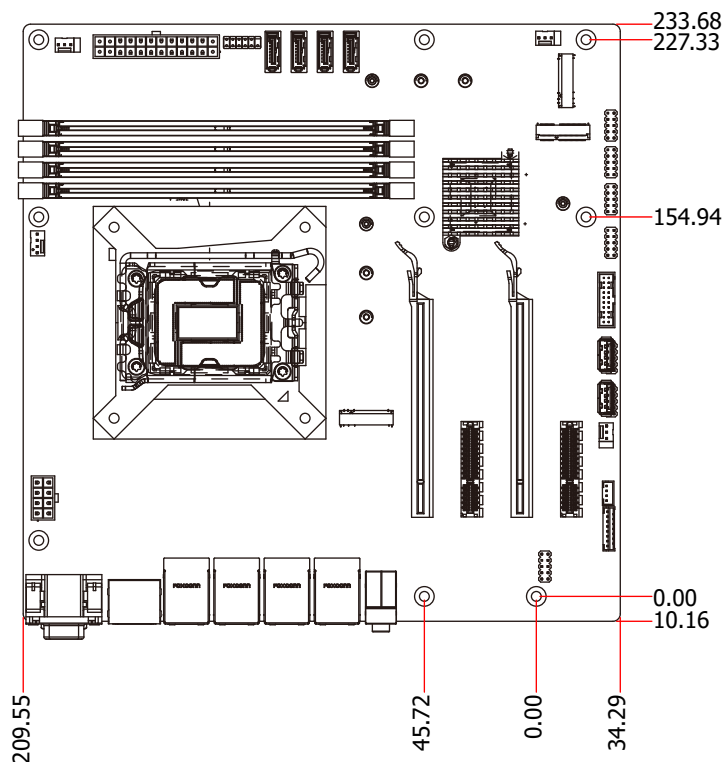
### Rich I/O

4 Intel 2.5GbE, 4 COM, 4 USB 3.2 Gen 2, 10 USB 3.2 Gen 1, 13 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

SYSTEM	Processor	13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ i9-13900E (24 Cores, 36M Cache, up to 5.2 GHz); 65W Intel® Core™ i9-13900TE (24 Cores, 36M Cache, up to 5.0 GHz); 35W Intel® Core™ i7-13700E (16 Cores, 30M Cache, up to 5.1 GHz); 65W Intel® Core™ i7-13700TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W Intel® Core™ i7-13700T (16 Cores, 30M Cache, up to 4.9 GHz); 35W Intel® Core™ i5-13500E (14 Cores, 24M Cache, up to 4.6 GHz); 65W Intel® Core™ i5-13500TE (14 Cores, 24M Cache, up to 4.5 GHz); 35W Intel® Core™ i5-13500T (14 Cores, 24M Cache, up to 4.6 GHz); 35W Intel® Core™ i5-13400E (10 Cores, 20M Cache, up to 4.6 GHz); 65W Intel® Core™ i3-13100E (4 Cores, 12M Cache, up to 4.4 GHz); 65W Intel® Core™ i3-13100TE (4 Cores, 12M Cache, up to 4.1 GHz); 35W Intel® Core™ i3-13100T (4 Cores, 12M Cache, up to 4.2 GHz); 35W  12th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ i9-12900E (16 Cores, 30M Cache, up to 5.0 GHz); 65W Intel® Core™ i9-12900TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W Intel® Core™ i7-12700E (12 Cores, 25M Cache, up to 4.8 GHz); 65W Intel® Core™ i7-12700TE (12 Cores, 25M Cache, up to 4.6 GHz); 35W Intel® Core™ i5-12500E (6 Cores, 18M Cache, up to 4.5 GHz); 65W Intel® Core™ i5-12500TE (6 Cores, 18M Cache, up to 4.3 GHz); 35W Intel® Core™ i3-12100E (4 Cores, 12M Cache, up to 4.2 GHz); 60W Intel® Core™ i3-12100TE (4 Cores, 12M Cache, up to 4.0 GHz); 35W Intel® Pentium® G7400E (2 Cores, 6M Cache, 3.6 GHz); 46W Intel® Pentium® G7400TE (2 Cores, 6M Cache, 3.0 GHz); 35W Intel® Celeron® G6900E (2 Cores, 4M Cache, 3.0 GHz); 46W Intel® Celeron® G6900TE (2 Cores, 4M Cache, 2.4 GHz); 35W	
	Chipset	Intel® R680E/Q670E Chipset	
	Memory	Four 288-pin UDIMM up to 128GB (ECC/Non-ECC) Dual Channel DDR5 up to 4400 MHz <b>*Speed support list follow User's Manual</b>	
	BIOS	AMI SPI 256Mbit	
GRAPHICS	Controller	Intel® HD Gen 9 Graphics	
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1	
		HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9	
		HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9	
	Display	1 x VGA	VGA: resolution up to 1920x1200 @ 60Hz
2 x DP++		DP++: resolution up to 4096x2304 @ 60Hz	
1 x HDMI 2.0a		HDMI: resolution up to 4096x2160 @ 24Hz	
Quad Displays	VGA + 2 DP++ + HDMI		
EXPANSION	Interface	2 x PCIe x16 (Gen 4) (1 x16 signals or 2 x8 signals)	
		2 x PCIe x4 (Gen 4)	
		1 x M.2 2230 E key (opt. PCIe/USB 2.0/Intel CNVi support) (Discrete Wifi 6E support)	
		1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe/SATA support)	
		1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe support)	
AUDIO	Audio Codec	Realtek ALC888	
ETHERNET	Controller	1 x Intel® I226-LM (Core i9/i7/i5 support iAMT) 1 x Intel® I226-V 2 x Intel® I226-V (only R680E support)	
REAR I/O	Ethernet	2 x 2.5GbE (RJ-45) or 4 x 2.5GbE (RJ-45) (only R680E support)	
	USB	4 x USB 3.2 Gen 2 4 x USB 3.2 Gen 1	
	Display	2 x DP++ 1 x HDMI 2.0a 1 x VGA	
	Audio	1 x Line-out 1 x Mic-in	1 x Line-in (opt. by request, MOQ required)
INTERNAL I/O	Serial	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 2 x RS-232 (2.54mm pitch)	
	USB	2 x USB 3.2 Gen1 4 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A)	
	Audio	1 x Front Audio Header	1 x S/PDIF
	SATA	4 x SATA 3.0 (up to 6Gb/s) RAID 0/1/5/10	
	PS/2	1 x PS/2 (2.54mm pitch)	
	DIO	1 x 8-bit DIO	
	SMBus	1 x SMBus	
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	
SECURITY	TPM	Nuvoton TPM 2.0	

## SPECIFICATION

POWER	Type	ATX	
	Connector	8-pin ATX 12V power	
		24-pin ATX power	
	Consumption	TBD	
RTC Battery	CR2032 Coin Cell		
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit Windows 11 Enterprise	
	Linux	Linux	
ENVIRONMENT	Temperature	Operating: -5 to 65°C	
		Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery	
	Humidity	Operating: 5 to 95% RH	
Storage: 5 to 95% RH			
MTBF	TBD		
MECHANISM	Dimensions	microATX Form Factor	244mm (9.6") x 244mm (9.6")
	Height	PCB: 1.6mm	
Top Side: TBD			
Bottom Side: TBD			
STANDARDS AND CERTIFICATIONS	Certifications	CE, FCC Class B, RoHS	

## ORDERING INFORMATION

Model Name	P/N	Memory	2.5 GbE	RS-232/422/485	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0	TPM 2.0	Power	Thermal	Temp.
RPS310-Q670E	770-RPS3101-000G	4 UDIMM	2	2	4	10	13	1	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C
RPS310-R680E	770-RPS3101-100G	4 UDIMM	4	2	4	10	13	1	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C

## PACKING LIST

1 RPS310-R680E/Q670E motherboard	
1 COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
1 Serial ATA data cable (Length: 500mm)	332-553001-005G
1 I/O shield	A49-RPS310-000G

## OPTIONAL ITEMS

USB 2.0 port cable (Length: 350/398mm)	A81-001066-016G
USB 3.2 Gen2 port cable (Length: 350mm)	A81-001075-017G
COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
Serial ATA data cable (Length: 500mm, W/LOCK, 90D)	A81-002128-017G
Thermal solution (For 35W, Height: 29.39mm)	A71-101136-000G
Thermal solution (For 65W, Height: 46mm)	A71-101137-000G
Thermal solution (For 95W/125W, Height: 110mm)	A71-101145-000G
DP to HDMI Dongle	612-D2H13M-000G
M.2-COM4 (M.2 serial port module)	770-M2COM1-000G
M.2-2LAN (M.2 LAN port module)	770-M22LN1-000G
M.2-2PSE (M.2 PSE module)	770-M22PS1-000G